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| APPLICATION NO.                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|-----------------------|------------------|
| 10/696,981                       | 10/30/2003  | Yaoqi Joe Liu        | 57750US002            | 7865             |
| 32692                            | 7590        | 06/09/2004           | EXAMINER              |                  |
| 3M INNOVATIVE PROPERTIES COMPANY |             |                      | BOUTSIKARIS, LEONIDAS |                  |
| PO BOX 33427                     |             |                      | ART UNIT              | PAPER NUMBER     |
| ST. PAUL, MN 55133-3427          |             |                      | 2872                  |                  |

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/696,981

Applicant(s)

LIU ET AL.

Examiner

Leo Boutsikaris

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2872

rw

-- Th MAILING DATE of this communication app ars on the cov r sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-30 and 34-37 is/are allowed.
- 6) ☒ Claim(s) 1,4-6,12,22 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 2,3,7-11,13-21 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Pri rity under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/5/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

The abstract of the disclosure is objected to because it contains the word "comprising".

Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, 12, 22, 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 5,593,786).

Regarding claims 1, 22, Parker discloses a glass laminate comprising five layers including:

a first non-adhesive optical layer 10 (bottom layer),

an *ith* non-adhesive optical layer 10 (top layer);

a multilayer optical adhesive between the first and the *ith* layer, the optical adhesive comprising a pair of adhesive layers 13, each one adhered to a non-adhesive optical layer 10. In one embodiment, one of the optical adhesive layers has a refractive index of (1.521 +/- 0.001) and the other has a refractive index of (1.535 +/- 0.001), see Example 3, col. 10. Furthermore,

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Parker teaches that the glass laminate may be such that the two optical layers 10, each comprising glass, may be of different glass, i.e., one facing the interior of an automobile and the other facing the exterior (lines 1-12, col. 6). Parker does not teach that the multilayer optical adhesive comprises a sequence of optical adhesive layers whose refractive index increases in the order of position from the first non-optical layer, in other words, the optical adhesive layer 13 with the smallest refractive index is adherent to the glass layer 10 with the smallest refractive index, and consequently, the optical adhesive layer 13 with the largest refractive index is adherent to the glass layer 10 with the largest refractive index. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the adhesive layers with refractive indices in an ascending order, starting from the glass layer with the smallest refractive index, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The result effective variable here is the order of the various adhesive layers relative to the glass layers. One would have been motivated to arrange the adhesive layers in that order in order to match the refractive indices of adjacent layers as much as possible, to avoid undesired internal reflections of the incident light (see lines 36-46, col. 2).

Regarding claims 4-5, the glass laminate of Parker further includes one (i.e.,  $x=2$ , where  $x=3$ ) polymeric layer 12 between a first adhesive layer 13 adjacent to the first non-adhesive layer 10 and an  $x$ th adhesive layer 13 adjacent to the  $i$ th non-adhesive layer 10 (lines 36-38, col. 3).

Regarding claim 6, the difference between refractive indices of any two adjacent layers of the multilayer optical adhesive is no greater than 0.05 (see Table in Example 3, col. 10).

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Regarding claim 12, the first layer 10 and the ith layer 10 are non-adhesive optical component layers comprising glass (line 22, col. 3).

Regarding claims 31-32, Parker teaches that the adhesive layers are disposed between the two glass layers so that reflectivity at the interface between the two optical layers is reduced (lines 36-39, col. 2).

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 5,593,786) in view of Hitschmann (EP 0942054).

Parker discloses all the limitations of the above claim except for teaching that the optical adhesive layers comprise pressure sensitive adhesive layers. Hitschmann discloses a multilayer optical adhesive comprising at least one pressure sensitive adhesive layer 2 and at least one cured structural hybrid adhesive layer 3, positioned between two optical, non-adhesive substrates 1 and 4 (Fig. 1a and Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use pressure sensitive adhesives for the optical adhesive layers 13 in the glass laminate of Parker, as taught by Hitschmann, since pressure sensitive adhesives offer a balance of properties such as adhesion, cohesion, stretchiness, and elasticity.

#### *Allowable Subject Matter*

Claims 2-3, 7-11, 13-21, 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 24-30, 34-37 are allowed.

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Claims 2-3, 7-11, 13-21, 23-30, 34-37 are allowable over the prior art of record for at least the reason that even though the prior art discloses multilayer optical adhesives, the prior art fails to teach or reasonably suggest, regarding claim 2, a multilayer optical composite wherein the multilayer optical adhesive comprises three or more adhesive layers, regarding claim 3, a multilayer optical composite wherein the multilayer optical adhesive consists essentially of 3 to 20 polymeric layers with refractive indices monotonically changing, regarding claims 7-11, 23, a multilayer optical composite wherein the multilayer optical adhesive comprises 5 or more layers, regarding claims 13-16, a multilayer optical composite wherein the first and the  $i$ th layer have specific claimed refractive indices, regarding claims 17-20, a multilayer optical composite wherein the multilayer optical adhesive consists essentially of 4 or more adhesive layers, regarding claim 21, a multilayer optical composite wherein the multilayer optical composite is a touch screen display comprising a conductive layer, regarding claims 24-25, a multilayer optical adhesive wherein the polymeric intermediate layer has a refractive index between  $n_{a1}$  and  $n_{ai}$ , regarding claims 26-30, a multilayer optical adhesive comprising 3 or more adhesive layers having indices of refraction varying monotonically between the outermost adhesive layers, and regarding claims 34-37, a method of producing a multilayer optical adhesive wherein the polymeric intermediate layer has a refractive index between  $n_{a1}$  and  $n_{ai}$ , as set forth by the claimed combination.

It is noted that in Parker's glass laminate, the intermediate polymeric layer 12 has a refractive index, which is greater than the refractive index of both adjacent optical adhesive layers 13 (see Table in Example 3, col. 10). Furthermore, even though Hitschmann discloses a

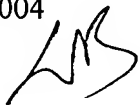
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multilayer optical adhesive (Figs. 2-3), he does not teach or suggest any values for the refractive indices for the various adhesive layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.  
Patent examiner, AU 2872  
June 4, 2004

A handwritten signature in black ink, appearing to be 'LBS', located below the typed name and date.